

Appl. No. 09/536,932  
Amdt. dated February 28, 2005  
Reply to Office Action of December 28, 2004

PATENT

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

Claims 1-26 (Canceled).

1                   27. (New)    A method of providing an image of a sample with a spectral  
2   imaging system, the method comprising:  
  
3                               illuminating the sample with radiation from an illumination source within a  
4   first band of wavelengths, wherein the first band of wavelengths excites regions within the sample  
5   causing the regions to emit radiation within a second band of wavelengths;  
  
6                               spectrally resolving the wavelengths within the second band of wavelengths  
7   with an interferometer that comprises at least first and second turning mirrors, one polarizing beam  
8   splitter, a detector array and a processor coupled to the detector array and coupled to a monitor;  
  
9                               creating an interferogram of the sample with the interferometer that is  
10   superimposed on an image of the sample transmitted by the interferometer, the interferogram  
11   creating step comprising:  
  
12                              preferentially reflecting a first polarization with the beam splitter to the  
13   first turning mirror;  
  
14                              preferentially transmitting a second polarization with the beam  
15   splitter to the second turning mirror; and  
  
16                              combining the first and second polarizations;  
  
17                              imaging the sample and the interferogram of the sample on the detector  
18   array;

Appl. No. 09/536,932  
Amdt. dated February 28, 2005  
Reply to Office Action of December 28, 2004

PATENT

19                    outputting a plurality of signals corresponding to an intensity at each pixel  
20   of the detector array; and

21                    displaying an image of the sample with the processor on the display.

1                    28. (New)    A method in accordance with claim 27 wherein the first  
2   polarization is perpendicular to a plane of incidence.

1                    29. (New)    A method in accordance with claim 27 wherein the first  
2   polarization is parallel to a plane of incidence.

1                    30. (New)    A method in accordance with claim 27 further comprising  
2   performing a Fourier transform for each pixel with the processor.